We Claim:

1. In a method for producing a hardened and/or hard-sintered, annularly axially symmetrical sintered shaped part based on iron with internal toothing, including undercuts in a tooth flank region and, optionally, functional recesses in a tooth region, wherein the manufacturing sequence includes the steps of powder pressing, sintering, mechanical forming of the undercuts, and hardening, the improvement which comprises:

producing undercuts with open-pored surfaces on the shaped part by milling prior to hardening the shaped part or on the pre-sintered shaped part;

thereby moving a milling cutter axis along a hypocycloid path defined with cusps and effecting a contact cutting action in a region of the cusps; and

thereby simultaneously rotating the shaped part about an axis thereof.

2. The method according to claim 1, which comprises pre-sintering the pressed part at temperatures of < 900°C, then machining the pre-sintered part by milling, and then fully sintering, and in the process hardening, the part at temperatures of between 1000°C and 1400°C.

3. The method according to claim 1, which comprises forming the part with an Fe-based alloy containing ≥ 0.2% of C, and effecting the step of fully sintering at temperatures of between 1100°C and 1250°C.

4. The method according to claim 1, which comprises forming the part with an Fe-based alloy containing ≥ 0.4% of C, and effecting the step of fully sintering at temperatures of between 1100°C and 1250°C.

5. The method according to claim 1, which comprises hardening the part by rapidly cooling from a sintering temperature during the step of fully sintering.

6. The method according to claim 1, which comprises forming the part with an Fe-based alloy containing < 0.3% of C, fully sintering the pressed part to form the finished shaped part under standard conditions, then machining the part by milling, and finally hardening the part, at least in a surface zone thereof, by case-hardening in a carbon-containing atmosphere.

7. The method according to claim 1, which comprises forming the undercuts with a single-tooth milling cutter with an integer ratio between a mill revolution time through one

cycloid path and one rotation of the part about the axis thereof.

8. The method according to claim 1, which comprises milling the part with a milling tool holder equipped with a tool for milling the undercut and with a dedicated tool for milling the functional recess.

9. A sliding sleeve for a motor vehicle transmission, comprising a sintered shaped part produced in accordance with the method of claim 1.